

WHAT IS CLAIMED IS:

1. An isolated polypeptide comprising an amino acid sequence selected from the group consisting of:
  - (a) a mature form of an amino acid sequence selected from the group consisting of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34;
  - (b) a variant of a mature form of an amino acid sequence selected from the group consisting of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34, wherein one or more amino acid residues in said variant differs from the amino acid sequence of said mature form, provided that said variant differs in no more than 15% of the amino acid residues from the amino acid sequence of said mature form;
  - (c) an amino acid sequence selected from the group consisting of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34; and
  - (d) a variant of an amino acid sequence selected from the group consisting of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34, wherein one or more amino acid residues in said variant differs from the amino acid sequence of said mature form, provided that said variant differs in no more than 15% of amino acid residues from said amino acid sequence.
2. The polypeptide of claim 1, wherein said polypeptide comprises the amino acid sequence of a naturally-occurring allelic variant of an amino acid sequence selected from the group consisting of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34.
3. The polypeptide of claim 2, wherein said allelic variant comprises an amino acid sequence that is the translation of a nucleic acid sequence differing by a single nucleotide from a nucleic acid sequence selected from the group consisting of SEQ ID NO:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31 and/or 33.

4. The polypeptide of claim 1, wherein the amino acid sequence of said variant comprises a conservative amino acid substitution.
5. An isolated nucleic acid molecule comprising a nucleic acid sequence encoding a polypeptide comprising an amino acid sequence selected from the group consisting of:
- (a) a mature form of an amino acid sequence selected from the group consisting of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34;
  - (b) a variant of a mature form of an amino acid sequence selected from the group consisting of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34, wherein one or more amino acid residues in said variant differs from the amino acid sequence of said mature form, provided that said variant differs in no more than 15% of the amino acid residues from the amino acid sequence of said mature form;
  - (c) an amino acid sequence selected from the group consisting of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34;
  - (d) a variant of an amino acid sequence selected from the group consisting of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34, wherein one or more amino acid residues in said variant differs from the amino acid sequence of said mature form, provided that said variant differs in no more than 15% of amino acid residues from said amino acid sequence;
  - (e) a nucleic acid fragment encoding at least a portion of a polypeptide comprising an amino acid sequence chosen from the group consisting of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34, or a variant of said polypeptide, wherein one or more amino acid residues in said variant differs from the amino acid sequence of said mature form, provided that said variant differs in no more than 15% of amino acid residues from said amino acid sequence; and
  - (f) a nucleic acid molecule comprising the complement of (a), (b), (c), (d) or (e).

6. The nucleic acid molecule of claim 5, wherein the nucleic acid molecule comprises the nucleotide sequence of a naturally-occurring allelic nucleic acid variant.
7. The nucleic acid molecule of claim 5, wherein the nucleic acid molecule encodes a polypeptide comprising the amino acid sequence of a naturally-occurring polypeptide variant.
8. The nucleic acid molecule of claim 5, wherein the nucleic acid molecule differs by a single nucleotide from a nucleic acid sequence selected from the group consisting of SEQ ID NO:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31 and/or 33.
9. The nucleic acid molecule of claim 5, wherein said nucleic acid molecule comprises a nucleotide sequence selected from the group consisting of
- (a) a nucleotide sequence selected from the group consisting of SEQ ID NO:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31 and/or 33;
  - (b) a nucleotide sequence differing by one or more nucleotides from a nucleotide sequence selected from the group consisting of SEQ ID NO:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31 and/or 33, provided that no more than 20% of the nucleotides differ from said nucleotide sequence;
  - (c) a nucleic acid fragment of (a); and
  - (d) a nucleic acid fragment of (b).
10. The nucleic acid molecule of claim 5, wherein said nucleic acid molecule hybridizes under stringent conditions to a nucleotide sequence chosen from the group consisting of SEQ ID NO:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31 and/or 33, or a complement of said nucleotide sequence.
11. The nucleic acid molecule of claim 5, wherein the nucleic acid molecule comprises a nucleotide sequence selected from the group consisting of
- (a) a first nucleotide sequence comprising a coding sequence differing by one or more nucleotide sequences from a coding sequence encoding said amino acid sequence, provided that no more than 20% of the

nucleotides in the coding sequence in said first nucleotide sequence differ from said coding sequence;

- (b) an isolated second polynucleotide that is a complement of the first polynucleotide; and
  - (c) a nucleic acid fragment of (a) or (b).
12. A vector comprising the nucleic acid molecule of claim 11.
13. The vector of claim 12, further comprising a promoter operably-linked to said nucleic acid molecule.
14. A cell comprising the vector of claim 12.
15. An antibody that immunospecifically-binds to the polypeptide of claim 1.
16. The antibody of claim 15, wherein said antibody is a monoclonal antibody.
17. The antibody of claim 15, wherein the antibody is a humanized antibody.
18. A method for determining the presence or amount of the polypeptide of claim 1 in a sample, the method comprising:
- (a) providing the sample;
  - (b) contacting the sample with an antibody that binds immunospecifically to the polypeptide; and
  - (c) determining the presence or amount of antibody bound to said polypeptide,
- thereby determining the presence or amount of polypeptide in said sample.
19. A method for determining the presence or amount of the nucleic acid molecule of claim 5 in a sample, the method comprising:
- (a) providing the sample;
  - (b) contacting the sample with a probe that binds to said nucleic acid molecule; and

- (c) determining the presence or amount of the probe bound to said nucleic acid molecule,

thereby determining the presence or amount of the nucleic acid molecule in said sample.

20. A method of identifying an agent that binds to a polypeptide of claim 1, the method comprising:
  - (a) contacting said polypeptide with said agent; and
  - (b) determining whether said agent binds to said polypeptide.
21. A method for identifying an agent that modulates the expression or activity of the polypeptide of claim 1, the method comprising:
  - (a) providing a cell expressing said polypeptide;
  - (b) contacting the cell with said agent; and
  - (c) determining whether the agent modulates expression or activity of said polypeptide,whereby an alteration in expression or activity of said peptide indicates said agent modulates expression or activity of said polypeptide.
22. A method for modulating the activity of the polypeptide of claim 1, the method comprising contacting a cell sample expressing the polypeptide of said claim with a compound that binds to said polypeptide in an amount sufficient to modulate the activity of the polypeptide.
23. A method of treating or preventing a POLYX-associated disorder, said method comprising administering to a subject in which such treatment or prevention is desired the polypeptide of claim 1 in an amount sufficient to treat or prevent said POLYX-associated disorder in said subject.
24. The method of claim 23, wherein said subject is a human.
25. A method of treating or preventing a POLYX-associated disorder, said method comprising administering to a subject in which such treatment or prevention is desired

the nucleic acid of claim 5 in an amount sufficient to treat or prevent said POLYX-associated disorder in said subject.

26. The method of claim 25, wherein said subject is a human.
27. A method of treating or preventing a POLYX-associated disorder, said method comprising administering to a subject in which such treatment or prevention is desired the antibody of claim 15 in an amount sufficient to treat or prevent said POLYX-associated disorder in said subject.
28. The method of claim 27, wherein the subject is a human.
29. A pharmaceutical composition comprising the polypeptide of claim 1 and a pharmaceutically-acceptable carrier.
30. A pharmaceutical composition comprising the nucleic acid molecule of claim 5 and a pharmaceutically-acceptable carrier.
31. A pharmaceutical composition comprising the antibody of claim 15 and a pharmaceutically-acceptable carrier.
32. A kit comprising in one or more containers, the pharmaceutical composition of claim 29.
33. A kit comprising in one or more containers, the pharmaceutical composition of claim 30.
34. A kit comprising in one or more containers, the pharmaceutical composition of claim 31.
35. A method for screening for a modulator of activity or of latency or predisposition to a POLYX-associated disorder, said method comprising:
  - (a) administering a test compound to a test animal at increased risk for a POLYX-associated disorder, wherein said test animal recombinantly expresses the polypeptide of claim 1;

- (b) measuring the activity of said polypeptide in said test animal after administering the compound of step (a);
- (c) comparing the activity of said protein in said test animal with the activity of said polypeptide in a control animal not administered said polypeptide, wherein a change in the activity of said polypeptide in said test animal relative to said control animal indicates the test compound is a modulator of latency of or predisposition to a POLYX-associated disorder.

36. The method of claim 35, wherein said test animal is a recombinant test animal that expresses a test protein transgene or expresses said transgene under the control of a promoter at an increased level relative to a wild-type test animal, and wherein said promoter is not the native gene promoter of said transgene.
37. A method for determining the presence of or predisposition to a disease associated with altered levels of the polypeptide of claim 1 in a first mammalian subject, the method comprising:
- (a) measuring the level of expression of the polypeptide in a sample from the first mammalian subject; and
  - (b) comparing the amount of said polypeptide in the sample of step (a) to the amount of the polypeptide present in a control sample from a second mammalian subject known not to have, or not to be predisposed to, said disease,
- wherein an alteration in the expression level of the polypeptide in the first subject as compared to the control sample indicates the presence of or predisposition to said disease.
38. A method for determining the presence of or predisposition to a disease associated with altered levels of the nucleic acid molecule of claim 5 in a first mammalian subject, the method comprising:
- (a) measuring the amount of the nucleic acid in a sample from the first mammalian subject; and

- (b) comparing the amount of said nucleic acid in the sample of step (a) to the amount of the nucleic acid present in a control sample from a second mammalian subject known not to have or not be predisposed to, the disease;

wherein an alteration in the level of the nucleic acid in the first subject as compared to the control sample indicates the presence of or predisposition to the disease.

39. A method of treating a pathological state in a mammal, the method comprising administering to the mammal a polypeptide in an amount that is sufficient to alleviate the pathological state, wherein the polypeptide is a polypeptide having an amino acid sequence at least 95% identical to a polypeptide comprising an amino acid sequence of at least one of SEQ ID NO:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and/or 34, or a biologically active fragment thereof.
40. A method of treating a pathological state in a mammal, the method comprising administering to the mammal the antibody of claim 15 in an amount sufficient to alleviate the pathological state.
41. An isolated polypeptide according to claim 1 comprising an amino acid sequence selected from the group consisting of:
- (a) a mature form of an amino acid sequence selected from the group consisting of SEQ ID NO: 10, 12, and/or 14,
  - (b) a variant of a mature form of an amino acid sequence selected from the group consisting of SEQ ID NO: 10, 12, and/or 14, wherein one or more amino acid residues in said variant differs from the amino acid sequence of said mature form, provided that said variant differs in no more than 15% of the amino acid residues from the amino acid sequence of said mature form;
  - (c) an amino acid sequence selected from the group consisting of SEQ ID NO: 10, 12, and/or 14, and



- (d) a variant of an amino acid sequence selected from the group consisting of SEQ ID NO: 10, 12, and/or 14, wherein one or more amino acid residues in said variant differs from the amino acid sequence of said mature form, provided that said variant differs in no more than 15% of amino acid residues from said amino acid sequence.
- 42. The polypeptide of claim 41, wherein said polypeptide comprises the amino acid sequence of a naturally-occurring allelic variant of an amino acid sequence selected from the group consisting of SEQ ID NO: 10, 12, and/or 14.
- 43. The polypeptide of claim 43, wherein said allelic variant comprises an amino acid sequence that is the translation of a nucleic acid sequence differing by a single nucleotide from a nucleic acid sequence selected from the group consisting of SEQ ID NO: 9, 11, and/or 13.
- 44. The polypeptide of claim 43, wherein the amino acid sequence of said variant comprises a conservative amino acid substitution.
- 45. An isolated nucleic acid molecule according to claim 5 comprising a nucleic acid sequence encoding a polypeptide comprising an amino acid sequence selected from the group consisting of:
  - (a) a mature form of an amino acid sequence selected from the group consisting of SEQ ID NO: 10, 12, and/or 14;
  - (b) a variant of a mature form of an amino acid sequence selected from the group consisting of SEQ ID NO: 10, 12, and/or 14, wherein one or more amino acid residues in said variant differs from the amino acid sequence of said mature form, provided that said variant differs in no more than 15% of the amino acid residues from the amino acid sequence of said mature form;
  - (c) an amino acid sequence selected from the group consisting of SEQ ID NO: 10, 12, and/or 14;
  - (d) a variant of an amino acid sequence selected from the group consisting of SEQ ID NO: 10, 12, and/or 14, wherein one or more amino acid

residues in said variant differs from the amino acid sequence of said mature form, provided that said variant differs in no more than 15% of amino acid residues from said amino acid sequence;

- (e) a nucleic acid fragment encoding at least a portion of a polypeptide comprising an amino acid sequence chosen from the group consisting of SEQ ID NO: 10, 12, and/or 14, or a variant of said polypeptide, wherein one or more amino acid residues in said variant differs from the amino acid sequence of said mature form, provided that said variant differs in no more than 15% of amino acid residues from said amino acid sequence; and
  - (f) a nucleic acid molecule comprising the complement of (a), (b), (c), (d) or (e).
46. The nucleic acid molecule of claim 45, wherein the nucleic acid molecule comprises the nucleotide sequence of a naturally-occurring allelic nucleic acid variant.
47. The nucleic acid molecule of claim 45, wherein the nucleic acid molecule encodes a polypeptide comprising the amino acid sequence of a naturally-occurring polypeptide variant.
48. The nucleic acid molecule of claim 45, wherein the nucleic acid molecule differs by a single nucleotide from a nucleic acid sequence selected from the group consisting of SEQ ID NO: 9, 11, and/or 13.
49. The nucleic acid molecule of claim 47, wherein said nucleic acid molecule comprises a nucleotide sequence selected from the group consisting of
- (a) a nucleotide sequence selected from the group consisting of SEQ ID NO: 9, 11, and/or 13;
  - (b) a nucleotide sequence differing by one or more nucleotides from a nucleotide sequence selected from the group consisting of SEQ ID NO: 9, 11, and/or 13, provided that no more than 20% of the nucleotides differ from said nucleotide sequence;
  - (c) a nucleic acid fragment of (a); and

(d) a nucleic acid fragment of (b).

50. The nucleic acid molecule of claim 45, wherein said nucleic acid molecule hybridizes under stringent conditions to a nucleotide sequence chosen from the group consisting of SEQ ID NO: 9, 11, and/or 13, or a complement of said nucleotide sequence.
51. The nucleic acid molecule of claim 45, wherein the nucleic acid molecule comprises a nucleotide sequence selected from the group consisting of
- (a) a first nucleotide sequence comprising a coding sequence differing by one or more nucleotide sequences from a coding sequence encoding said amino acid sequence, provided that no more than 20% of the nucleotides in the coding sequence in said first nucleotide sequence differ from said coding sequence;
  - (b) an isolated second polynucleotide that is a complement of the first polynucleotide; and
  - (c) a nucleic acid fragment of (a) or (b).
52. A vector comprising the nucleic acid molecule of claim 51.
53. The vector of claim 52, further comprising a promoter operably-linked to said nucleic acid molecule.
54. A cell comprising the vector of claim 52.
55. An antibody that immunospecifically-binds to the polypeptide of claim 41.
56. The antibody of claim 55, wherein said antibody is a monoclonal antibody.
57. The antibody of claim 55, wherein the antibody is a humanized antibody.
58. A method for determining the presence or amount of the polypeptide of claim 41 in a sample, the method comprising:
- (a) providing the sample;
  - (b) contacting the sample with an antibody that binds immunospecifically to the polypeptide; and

- (c) determining the presence or amount of antibody bound to said polypeptide,  
thereby determining the presence or amount of polypeptide in said sample.
59. A method for determining the presence or amount of the nucleic acid molecule of claim 45 in a sample, the method comprising:
- (a) providing the sample;
  - (b) contacting the sample with a probe that binds to said nucleic acid molecule; and
  - (c) determining the presence or amount of the probe bound to said nucleic acid molecule,
- thereby determining the presence or amount of the nucleic acid molecule in said sample.
60. A method of identifying an agent that binds to a polypeptide of claim 41, the method comprising:
- (a) contacting said polypeptide with said agent; and
  - (b) determining whether said agent binds to said polypeptide.
61. A method for identifying an agent that modulates the expression or activity of the polypeptide of claim 41, the method comprising:
- (a) providing a cell expressing said polypeptide;
  - (b) contacting the cell with said agent; and
  - (c) determining whether the agent modulates expression or activity of said polypeptide,
- whereby an alteration in expression or activity of said peptide indicates said agent modulates expression or activity of said polypeptide.
62. A method for modulating the activity of the polypeptide of claim 41, the method comprising contacting a cell sample expressing the polypeptide of said claim with a compound that binds to said polypeptide in an amount sufficient to modulate the activity of the polypeptide.

63. A method of treating or preventing a POLY5-, POLY6- and/or POLY7-associated disorder, said method comprising administering to a subject in which such treatment or prevention is desired the polypeptide of claim 42 in an amount sufficient to treat or prevent said POLY5-, POLY6 and/or POLY7-associated disorder in said subject.
64. The method of claim 63, wherein said subject is a human.
65. A method of treating or preventing a POLY5-, POLY6- and/or POLY7-associated disorder, said method comprising administering to a subject in which such treatment or prevention is desired the nucleic acid of claim 45 in an amount sufficient to treat or prevent said POLY5-, POLY6- and/or POLY7-associated disorder in said subject.
66. The method of claim 65, wherein said subject is a human.
67. A method of treating or preventing a POLY5-, POLY6- and/or POLY7-associated disorder, said method comprising administering to a subject in which such treatment or prevention is desired the antibody of claim 55 in an amount sufficient to treat or prevent said POLY5-, POLY6- and/or POLY7-associated disorder in said subject.
68. The method of claim 67, wherein the subject is a human.
69. A pharmaceutical composition comprising the polypeptide of claim 41 and a pharmaceutically-acceptable carrier.
70. A pharmaceutical composition comprising the nucleic acid molecule of claim 45 and a pharmaceutically-acceptable carrier.
71. A pharmaceutical composition comprising the antibody of claim 67 and a pharmaceutically-acceptable carrier.
72. A kit comprising in one or more containers, the pharmaceutical composition of claim 69.
73. A kit comprising in one or more containers, the pharmaceutical composition of claim 70.

74. A kit comprising in one or more containers, the pharmaceutical composition of claim 71.
75. A process for the manufacture of a medicament for treating a syndrome associated with a human disease according to claim 63, the disease selected from a POLY5-, POLY6- and/or POLY7-associated disorder, comprising admixing a therapeutic agent selected from the group consisting of a POLY5-, POLY6- and/or POLY7-polypeptide, a POLY5-, POLY6- and/or POLY7-nucleic acid, and/or a POLY5-, POLY6- and/or POLY7-antibody, together with a pharmaceutically-acceptable carrier, diluent and/or filler.
76. A method for screening for a modulator of activity or of latency or predisposition to a POLY5-, POLY6- and/or POLY7-associated disorder, said method comprising:
- (a) administering a test compound to a test animal at increased risk for a POLY5-, POLY6- and/or POLY7-associated disorder, wherein said test animal recombinantly expresses the polypeptide of claim 41;
  - (b) measuring the activity of said polypeptide in said test animal after administering the compound of step (a);
  - (c) comparing the activity of said protein in said test animal with the activity of said polypeptide in a control animal not administered said polypeptide, wherein a change in the activity of said polypeptide in said test animal relative to said control animal indicates the test compound is a modulator of latency or of predisposition to a POLY5-, POLY6- and/or POLY7-associated disorder.
77. The method of claim 76, wherein said test animal is a recombinant test animal that expresses a test protein transgene or expresses said transgene under the control of a promoter at an increased level relative to a wild-type test animal, and wherein said promoter is not the native gene promoter of said transgene.

78. A method for determining the presence of or predisposition to a disease associated with altered levels of the polypeptide of claim 41 in a first mammalian subject, the method comprising:

- (a) measuring the level of expression of the polypeptide in a sample from the first mammalian subject; and
- (b) comparing the amount of said polypeptide in the sample of step (a) to the amount of the polypeptide present in a control sample from a second mammalian subject known not to have, or not to be predisposed to, said disease,

wherein an alteration in the expression level of the polypeptide in the first subject as compared to the control sample indicates the presence of or predisposition to said disease.

79. A method for determining the presence of or predisposition to a disease associated with altered levels of the nucleic acid molecule of claim 45 in a first mammalian subject, the method comprising:

- (a) measuring the amount of the nucleic acid in a sample from the first mammalian subject; and
- (b) comparing the amount of said nucleic acid in the sample of step (a) to the amount of the nucleic acid present in a control sample from a second mammalian subject known not to have or not be predisposed to, the disease;

wherein an alteration in the level of the nucleic acid in the first subject as compared to the control sample indicates the presence of or predisposition to the disease.

80. A method of treating a pathological state in a mammal, the method comprising administering to the mammal a polypeptide in an amount that is sufficient to alleviate the pathological state, wherein the polypeptide is a polypeptide having an amino acid sequence at least 95% identical to a polypeptide comprising an amino acid sequence of at least one of SEQ ID NO: 10, 12, and/or 14, or a biologically active fragment thereof.

81. A method of treating a pathological state in a mammal, the method comprising administering to the mammal the antibody of claim 55 in an amount sufficient to alleviate the pathological state.
82. The use of a therapeutic in the manufacture of a medicament for treating a syndrome associated with a human disease, the disease selected from a POLYX-associated disorder, wherein said therapeutic is selected from the group consisting of a POLYX polypeptide, a POLYX nucleic acid, and a POLYX antibody.

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